# *INSTALLATION INSTRUCTIONS*

## D5XH

**DIGI-5 DDS Digital Distribution System**
**Rack Mount, 6 Zone Expansion Hub**

## Safety Information

**WARNING**

RISK OF ELECTRIC SHOCK
DO NOT OPEN!

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instruction in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR SHOCK,
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

# IMPORTANT SAFETY INFORMATION

**Read Information** — All the safety and operating information should be read before the appliance is operated.
**Follow Information** — All operating and use information should be followed.
**Retain Information** — The safety and operating information should be retained for future reference.
**Heed Warnings** — All warnings on the appliance and in the operating instructions should be heeded.
**Wall Mounting** — Mounting of this appliance should be done only by an authorized installer.
**Ventilation** — The appliances should be situated so that their location or position does not interfere with their proper ventilation. These appliances should never be placed near or over a radiator or heat register. These appliances should not be placed in a built-in installation such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
**Non-Use Periods** — Appliances that are left unattended and unused for long periods of time should be de-energized.
**Grounding or Polarization** — Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one blade wider than the other blade. A grounding type plug has two blades and a third grounding prong. The polarized wide blade and the third prong are provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.
**Power Cord Protection** — Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
**Water** — Do not use the apparatus near water.
**Cleaning** — Unplug the apparatus from the power outlet before cleaning. Use only a dry cloth to clean the apparatus.
**Power Lines** — An outdoor antenna should be located away from power lines. When installing an outside antenna system, extreme care should be taken to avoid touching power lines or circuits, as contact with them may be fatal.
**Object and Liquid Entry** — Never insert objects of any kind through the openings of these appliances, as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Care should be taken so that objects do not fall and liquids are not spilled into the appliance through openings in the enclosure.
**Servicing** — Do not attempt to service these appliances yourself, as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

**Damage Requiring Service** — These appliances should be serviced by qualified service personnel when:
• A power supply connection or a plug has been damaged or
• If liquid has been spilled into the appliance or objects have fallen into the appliance or
• The appliance has been exposed to water or moisture or
• The appliance does not appear to operate normally or exhibits a marked change in performance or
• The appliance has been dropped or the enclosure damaged.
**Replacement Parts** — When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
**Safety Check** — Upon completion of any service or repairs to this audio product, ask the service technician to perform safety checks to determine that the audio product is in proper operating condition.
**Lightning Storms** — Unplug this apparatus during lightning storms or when unused for long periods of time.
**Attachments and Accessories** — Use only attachments/accessories specified by the manufacturer.
**Cart, Stand, Tripod, Bracket or Table** — Use only with a cart, stand, tripod, bracket or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip over.
**Disconnect Device** — Where the mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain operable.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not in-stalled and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Changes or modifications not expressly approved by Xantech could void the user's authority to operate the equipment

**Caring For the D5XH**
Clean only with a dry soft cloth.
It is important to properly care for your D5XH DDS Hub. Follow these guidelines to ensure your device is preserved and protected.

- Do not expose the D5XH to rain, liquids or moisture for an extended period of time.
- Do not expose the D5XH to temperature extremes.
- Do not place any objects on top of the D5XH to prevent chassis damage.

**Operating Temperatures & Environments**
Operating Temperature: 32-104°F (0-40° C)
Humidity: 0-90%

**Precautions**

- Always exercise care when operating the D5XH Digital Audio Distribution Hub.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- In the unlikely event that smoke, abnormal noise, or strange odor is present, immediately power the D5XH off. Please report the problem to your dealer immediately.
- Never attempt to disassemble the D5XH. You will lose any product warranty on the unit.

# 1. Introduction

## Modern Convenience

The D5XH 4 Source, 6 Zone Digital Audio Expansion Router, when used with the D5RH Digital Audio Router, provides the ability to listen to 4 different audio sources in up to 28 separate areas of the home for total flexibility and convenience. No need to have multiple audio systems in different areas, just select a source from one of Xantech's premium in-wall keypad, sit back and enjoy!

## Crystal Clear Digital Sound

End-to-end digital architecture means that the entire signal path of the audio system remains in the digital domain from start to finish. This means that noise, signal loss and other unwanted effects are never present. Each keypad contains a 30 Watt per channel digital amplifier that allows the user to play music at loud volume when desired. This also means that music at any volume is full and rich, without distortion and with plenty of bass!

## Simple, Logical Installation

The D5RH and D5XH connect with CAT-5 and speaker wire, making them reliable and easy to install. Any digital or analog audio source can be connected directly to the D5XH Digital Audio Router, or remotely using a D5IP Local Source Wall Plate. Keypads and Wall Plates are connected to the D5XH using CAT-5 wiring (inexpensive and reliable), while speakers are connected to D5KP Amplified Keypads using traditional speaker wire.

## Entertaining Possibilities

The D5XH's Whole House Music and Zone Grouping features make entertaining more fun than ever. Fully customized audio options allow for control of the entire house from one location and also allow for the creation of multiple-zone linking where groups of zones work together.

## Control for Parents

The Source Lock Out feature allows you to disable specific sources in the kid's rooms that you don't want them to access.

## About DIGI-5 Technology

DIGI-5 is a revolutionary new technology standard that provides a complete end-to-end digital audio solution over CAT-5 wiring. DIGI-5 is based on advanced digital distribution and amplification circuits that allow multi-room audio systems to be installed quickly and cost effectively.

DIGI-5 is a collaboratively developed technology that is licensed by the Linear Home Technology Group and is being initially integrated on a Linear group-wide basis, targeted to expand market and consumer acceptance of such systems.

## Features

- 4 Source, 6 Zone Expansion for D5RH Digital Audio Router
- Combine Up to 4 D5XH Chassis for Total of Up to 28 Zones
- Stand-Alone 4 Source 6 Zone Capability Expandable to 24 Zones
- End-to-End Digital Architecture For Crystal Clear Sound with No Signal Loss
- Simple Cat-5 Wiring requirements
- Innovative D5KP Amplified Keypad Controllers (not included) Provide Custom Control Options
- No PC Software Required for Setup-Simply Plug in D5KP Keypads and Go
- D5RM Slim-line IR Remote Included
- Whole House Music-Turns On All Zones to the Same Source
- Zone Functions, Do Not Disturb, Source Lock Out, Tone Control, Balance, Loudness, Dynamic Range Compression (DRC)
- Local (In-Room) Source Connectivity with Optional D5IP Local Source Wall Plates
- Supports all Features of D5RH Digital Audio Router
- Paging/DB Functionality w/ Optional Communications Controller
- Compact Single Rack Space Design
- Rack Mountable – Optional Rack Ear Kit Available (RM1UKIT)

## D5XH Accessories

- D5RH 4 Source, 4 Zone Digital Audio Hub
- D5KP Amplified Keypad Controller
- D5IP Source Input Wall Plate
- D5MR Slim-line IR Remote
- D5LR Learning Remote Control
- RM1UKIT 1U Rack Ear Kit

## Defining Terms

### Zone

A Zone is defined as an area of the house that has separate source selection capabilities from all other areas of the house. Typically, a zone is comprised of a single room, but it is possible for a zone to spread across multiple rooms (kitchen/dining room, master bedroom/master bath) or for multiple zones to be contained in one room (game room/bar area or multiple zones in the yard).

### Source

A Source is any audio (or audio/video) device that is connected to the SOURCE INPUTS of the D5RH. Any Source can be heard in any zone in the system.

### Local Source

A Local Source is an audio (or audio/video) device that is connected to a D5IP Source Input Wall Plate. Local Sources are able to be heard only in the zone in which they are installed and may not be heard in other zones of the system.

### Front Panel

The front panel of the D5XH is populated simply by a Power LED and a power button. Figure 1-2 and Table 1-1 provide descriptions and locations of Front Panel controls and indicators.

***Figure 1.1: D5XH Front Panel***

| | Indicator/Button | Function | LED |
|---|---|---|---|
| 1 | Power LED | Indicates Power ON/OFF Status | Red |
| 2 | Power Button | Turns System Power ON/OFF | |

***Table 1.1: Front Panel***

## Rear Panel

The Rear Panel of the D5XH has connections for Power, Source Loop Inputs (from D5RH), Source Loop Outputs (to additional D5XH chassis), Zone Outputs, IR Outputs, Auxiliary Power, USB and Expansion capabilities as well as Zone Pairing and Unit I.D. DIP Switches.

Figure 1-3 and Table 1-2 provide descriptions and locations of Rear Panel connections.

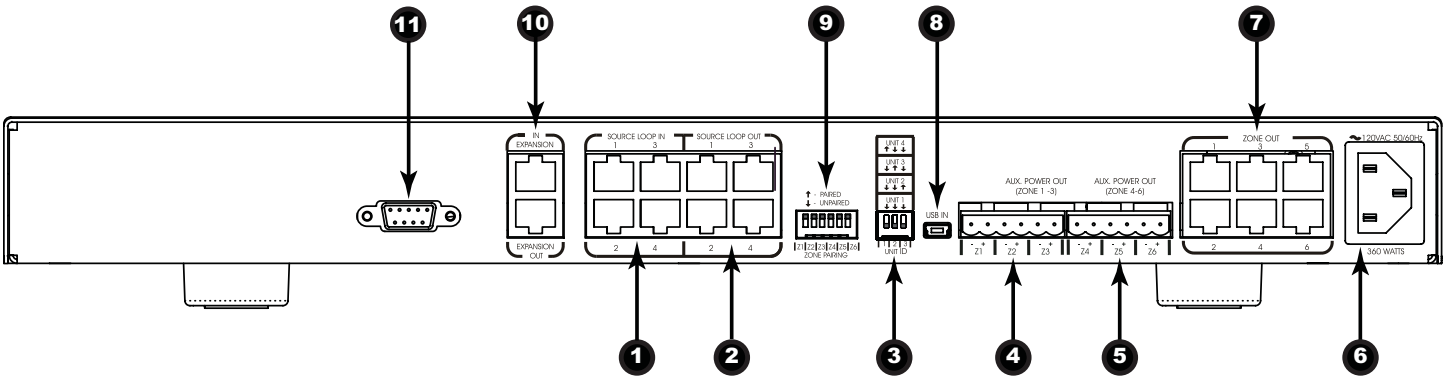



***Figure 1-3: Rear Panel***

| | Connector | Function |
|---|---|---|
| 1 | Source Loop Input | Source Audio Inputs from D5RH |
| 2 | Source Loop Output | Source Audio Outputs to D5XH Expansion Chassis |
| 3 | Unit I.D. DIP Switches | Sets Chassis Unit Identification |
| 4 | Aux. Power Out Zones 1-3 | Provides Additional Power to Keypads |
| 5 | Aux. Power Out Zones 4-6 | Provides Additional Power to Keypads |
| 6 | AC Power Connector | Plugs into 110 VAC Wall Outlet (Export 240VAC models also available) |
| 7 | Zone Output Ports | Connect to D5KP Amplified Keypads Located in Each Zone |
| 8 | USB Port | For Firmware Updates |
| 9 | Zone Pairing Switches | Links Multiple Zones Together |
| 10 | Expansion Port IN/OUT | Control/Status Link Between D5RH and Additional D5XH Chassis |
| 11 | RS232 Port | RS232 Communication Port |

***Table 1.2: Rear Panel***

# 2. System Design Overview/Applications

## Planning

Before installing the D5XH, it is essential to have a detailed and accurate system design. The first step to a good design is to map the system. It is advisable to mark up a copy of the house floor plan with speaker, keypad and equipment locations, etc. Make sure that all locations are decided upon before pre-wiring so that all necessary wiring and installation hardware is in place.

It is essential that ALL system components are accounted for prior to the pre-wire stage. After establishing design goals, make a detailed list of all components. Include source equipment, Keypads, expansion Routers, local source wall plates, IR emitters, etc.

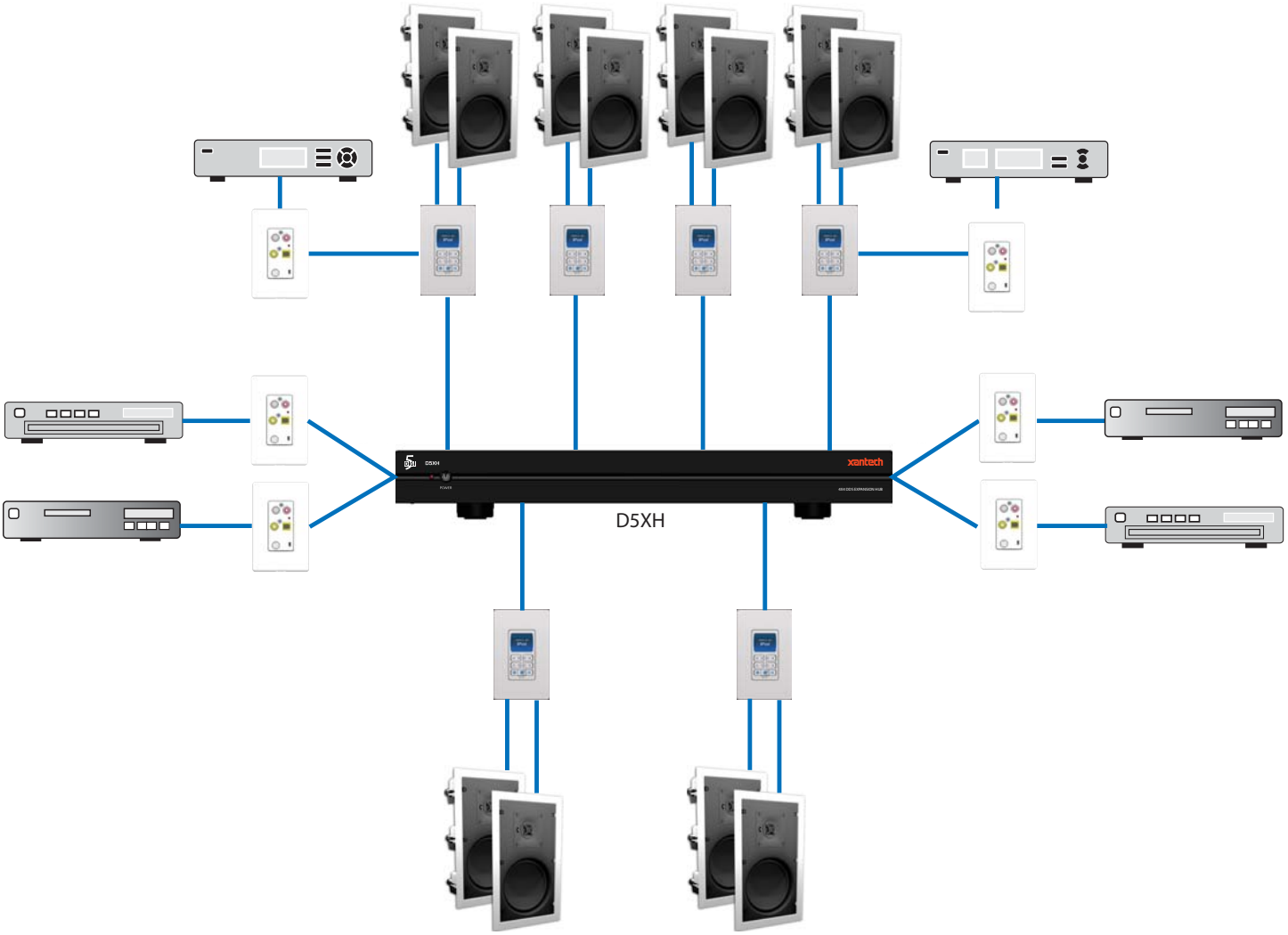



***Figure 2-1: System Wiring Overview***

Note: For clarity, Figure 2-1 shows a single zone connected to a D5RH and a single zone connected to a D5XH Expansion Router.

## Pre-Construction

In a pre-construction installation, walls and ceilings are open with no drywall installed. This is desirable and allows the installer greater access than in retro-fit applications.
Before actually running any wire or cable, take the time to look around each room or area of the house and plan your wire paths for maximum efficiency. Look for routes through uncluttered parts of the stud wall or ceiling that allow you to group all low-voltage (video, speaker wires, Cat-5, telephone, etc.) wires wherever possible. It is a good practice to label both ends of all cables and to protect wires by tying a plastic bag over the ends.
Note: Do not run low-voltage wires closer than 12" from high-voltage wires. If necessary, cross low-voltage wires at a 90º angle to prevent interference.

## Retro-Fit Wiring / Post Construction

Retro-fit installations are more difficult to complete than pre-construction because walls and ceilings are intact. Typically wires must be fished into position through walls, floors and ceilings.

Holes must be cut; speakers mounted directly in the ceiling or walls with no rough-in brackets and Keypads and local source wall plates must be mounted in existing drywall.

## Pre-Wiring

D5XH to D5KP Keypads
The D5XH and all associated components are wired using Cat-5 terminated to the T-568A Wiring Standard (Figure 2-2). When pre-wiring, run lengths of Cat-5 from the pre-determined equipment location (the “head-end”) to each Keypad location. The Cat-5 routes all audio, power, IR and status information needed for full system operation.

Note: For maximum performance over long runs (more than 150 ft) run an additional 16AWG 2-conductor wire for external power.

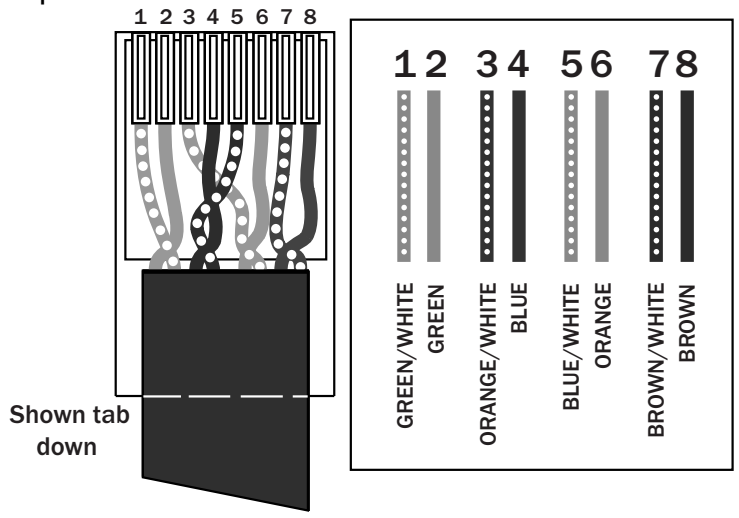



***Figure 2-2: T-568A Wiring Standard***

## Keypads to Speakers

Run 16AWG 2-conductor stranded copper speaker wire between keypad locations and speaker locations.

## Local Sources to Keypads

Local sources are only available within the area that they are installed. They will not be available to other areas of the house as they are not distributed by the D5RH/D5XH. Run lengths of Cat-5 from any local (in-room) source to the keypad located in that area.

## Expanded 4 Source, 8-28 Zone System

D5XH Expansion Router

Figure 2-5 shows an expanded system with four sources and ten zones with the addition of Local Sources in four of the zones. Each zone can have one local source. The system is comprised of a D5RH Digital Audio Router, D5XH Expansion Router, D5KP Amplified Keypad Controllers, D5IP Local Source Wall Plates and Xantech XTC Series Speakers. This configuration provides audio from each source into each zone as well as control of each source from each zone. Zones with Local Sources have access to and control of those sources, but the Local Sources are not available to other zones within the system. This system can be expanded up to 28 zones using additional D5XH's.

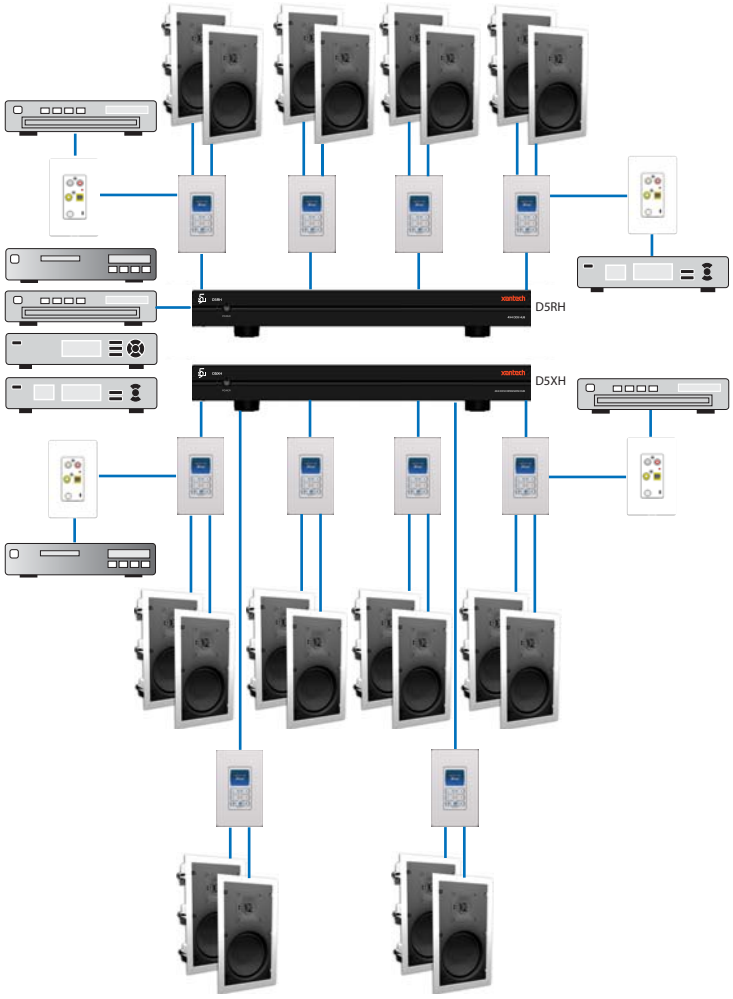



***Figure 2-5: Expanded System - 4 Sources/10 Zones + Local Sources***

## Stand-Alone (No D5RH) 4 Source, 6 Zone System

Figure 2-6 shows a stand-alone system with four sources and six zones with the addition of Local Sources in two of the zones. Each zone can have one local source. The system is comprised of a D5XH, D5KP Amplified Keypad Controllers, D5IP Source Input Wall Plates and Xantech XTC Series Speakers. This configuration provides audio from each source into each zone as well as control of each source from each zone. Zones with Local Sources have access to and control of those sources, but the Local Sources are not available to other zones within the system. This system can be expanded up to 24 zones using additional D5XHs (4 units in all).

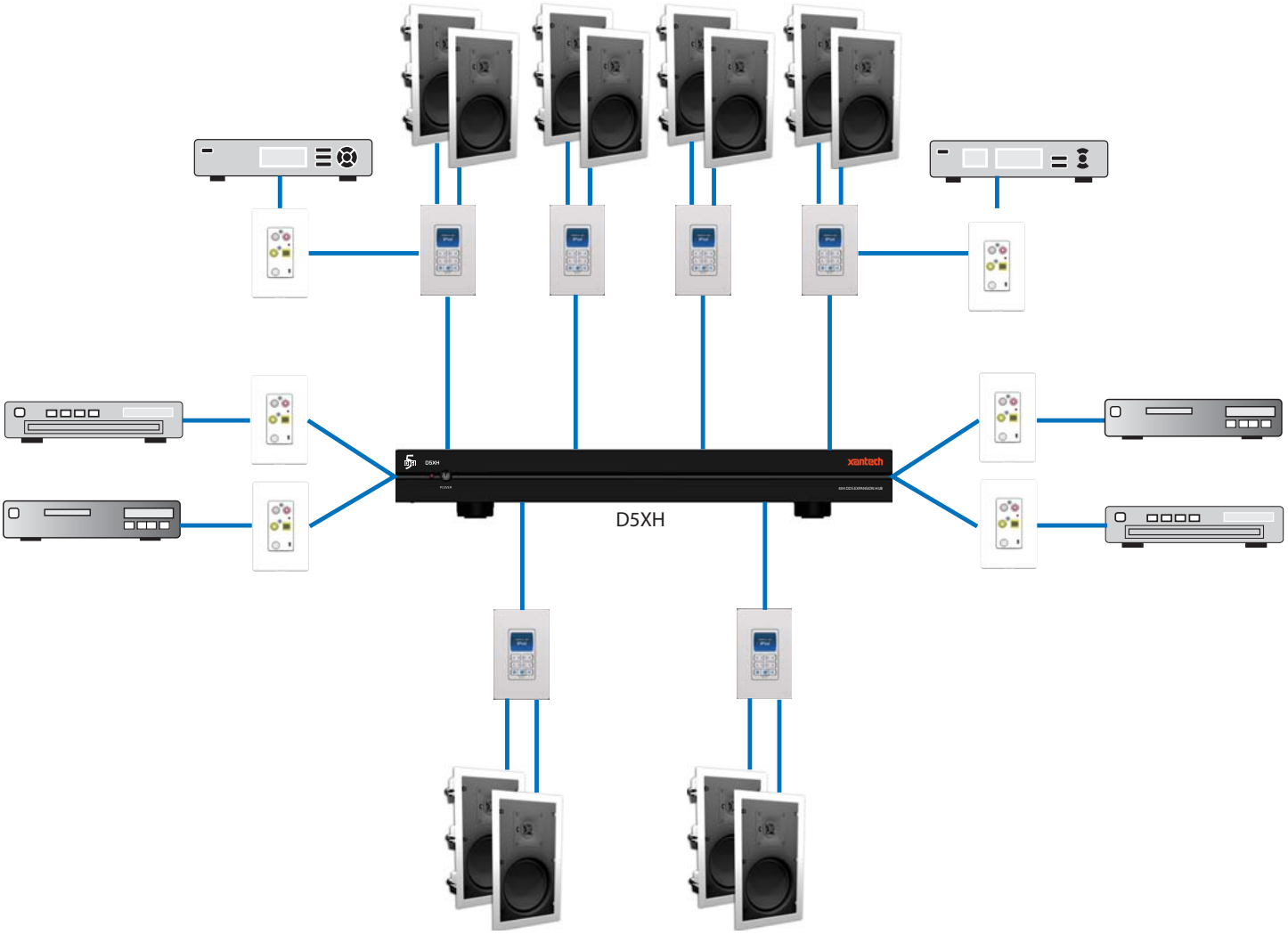



***Figure2-6: Stand-Alone 4 Source, 6 Zone***

## Expanded Standalone (No D5RH) 4 Source, 6-24 Zone System

Figure 2-7 shows a stand-alone system with four sources and twenty four zones with the addition of Local Sources in eight of the zones. Each zone can have one local source. The system is comprised of four D5XH , D5KP Amplified Keypad Controllers, D5IP Source Input Wall Plates and Xantech XTC Series Speakers. This configuration provides audio from each source into each zone as well as control of each source from each zone. Zones with Local Sources have access to and control of those sources, but the Local Sources are not available to other zones within the system.

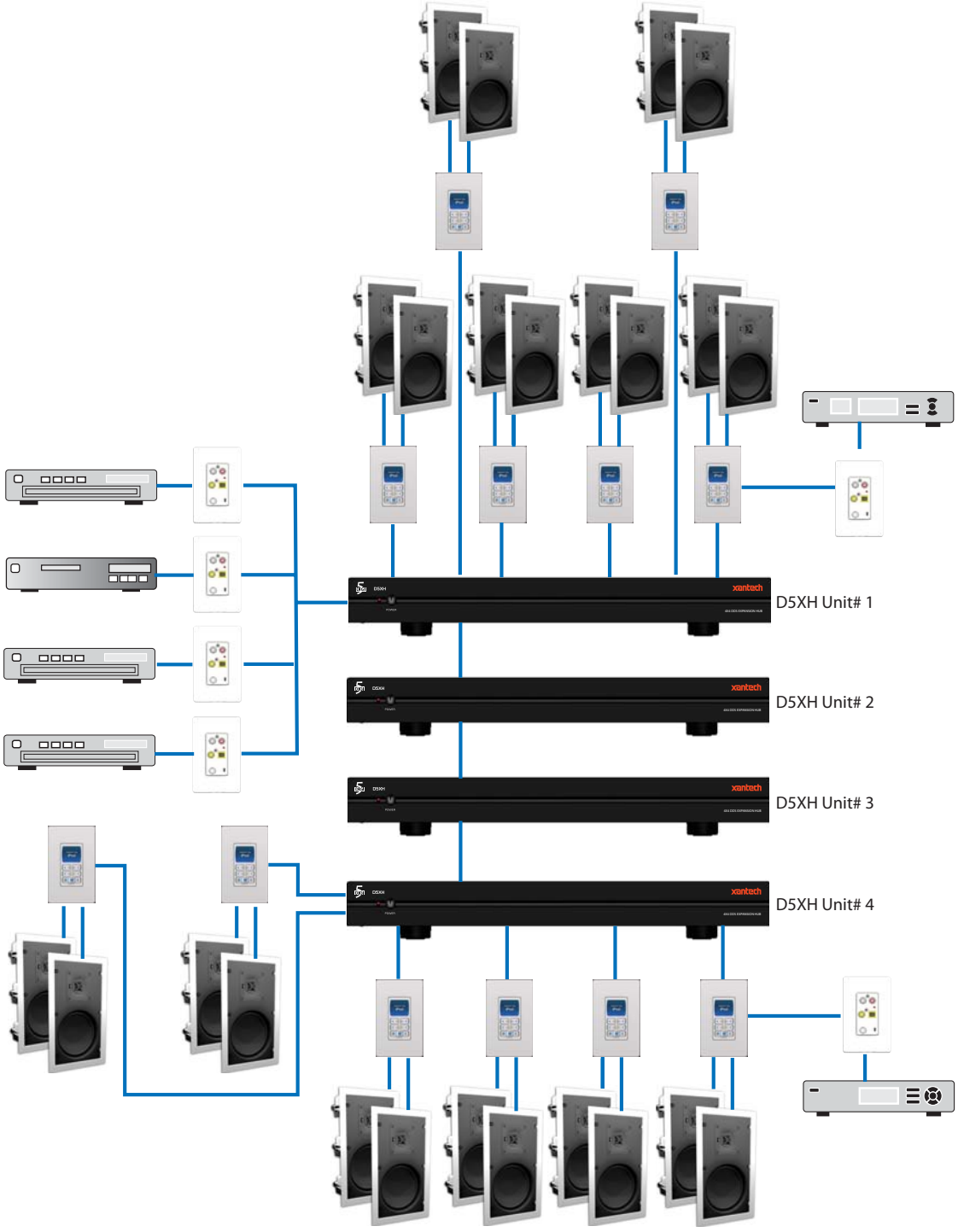



***Figure 2-7: Expanded System - 4 Sources/24 Zones + Local Sources***

## 3. Connections

The D5XH is part of an integrated system that requires the use of other components. Depending on the system design, these components may include:

- D5KP Amplified Keypad - at least one per zone required
- D5IP Source Input Wall Plates - one per zone where a Local Source is desired
- D5RH Hub – Main 4x4 Digital Distribution System Hub
- Xantech Outdoor, Ceiling and In-Wall Speakers
- Xantech IR Emitters and accessories

This section describes the connectivity between these various components and the source audio components that comprise the system. Each D5RH/D5XH system is unique, and not all connections will be made in every installation.

**Important Safety Note**: Make sure that the D5XH is powered OFF before making any connections.

### 1 Source Loop Inputs (SOURCE LOOP IN)

The Source Loop Inputs are used primarily when adding D5XH Routers to a D5RH in order to create more than four zones. These connectors carry Audio, and IR information between the units and allow seamless functionality in all areas of the home with no complicated cross-wiring, splicing or specialized adapters needed. When adding a D5XH Router to a D5RH system, simply connect Cat-5 Patch Cables (included with the D5XH) from the SOURCE LOOP OUTs of the D5RH to the SOURCE LOOP INs of the D5XH as shown in Figure 3-1. Complete connections for expanded systems are described in the section entitled Multi-Chassis Connections.

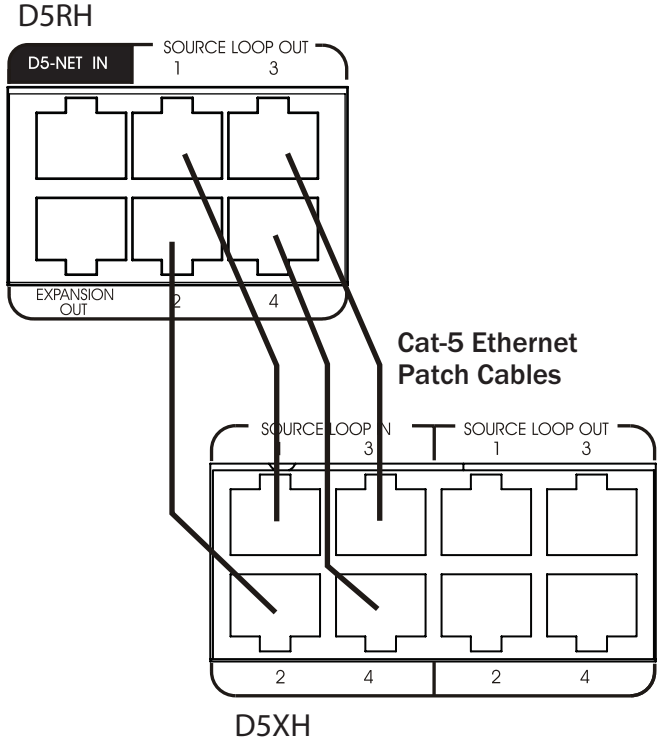



***Figure 3-1: Source Loop Inputs***

## 10 EXPANSION IN

Connect the Cat-5 Patch Cable included with the D5XH from the D5RH's EXPANSION OUT port to the D5XH's EXPANSION IN port as shown. Complete connections for expanded systems are described in the section entitled Multi-Chassis Connections.

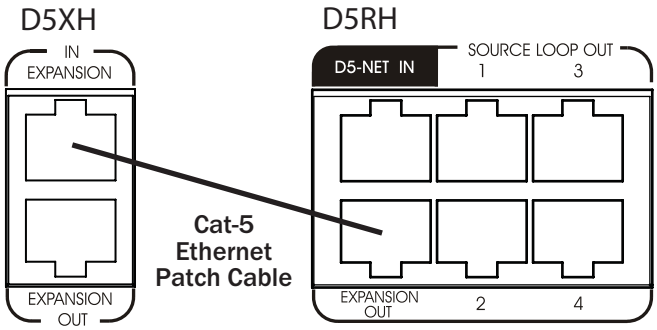



***Figure 3-2: Expansion In***

## 7 ZONE OUT

The ZONE OUT RJ-45 connectors interface with D5KP Amplified Keypad Controllers through Cat-5 cables wired to the T-568A Standard. These connectors carry IR information from the Keypads as well as audio information to the Keypads. Status information is also carried between the D5RH/D5XH chassis and the Keypads. While a great deal of information is handled by the ZONE OUT connections, the connections are straightforward. Simply connect Cat-5 cables terminated to the T-568A configuration (Figure 3-3) from each Keypad to the corresponding ZONE OUT connector as shown in Figure 3-4.

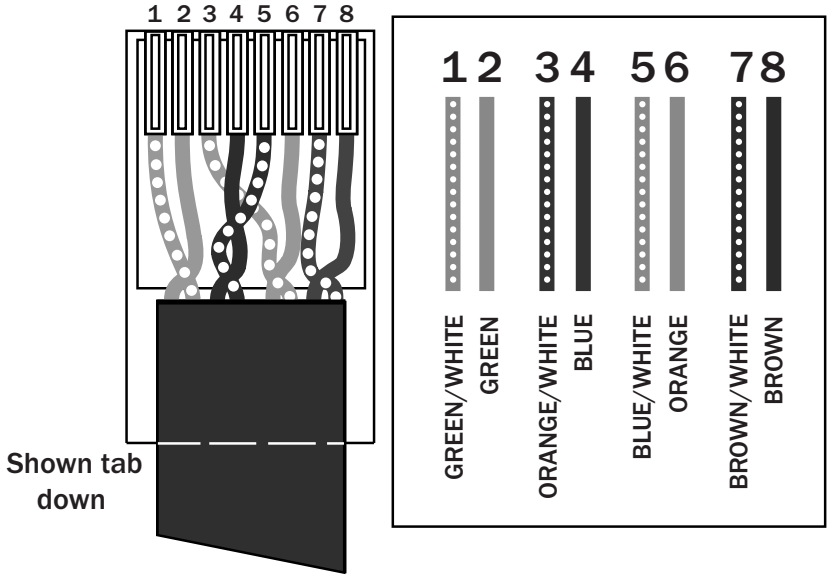



***Figure 3-3: T-568A Wiring Standard***

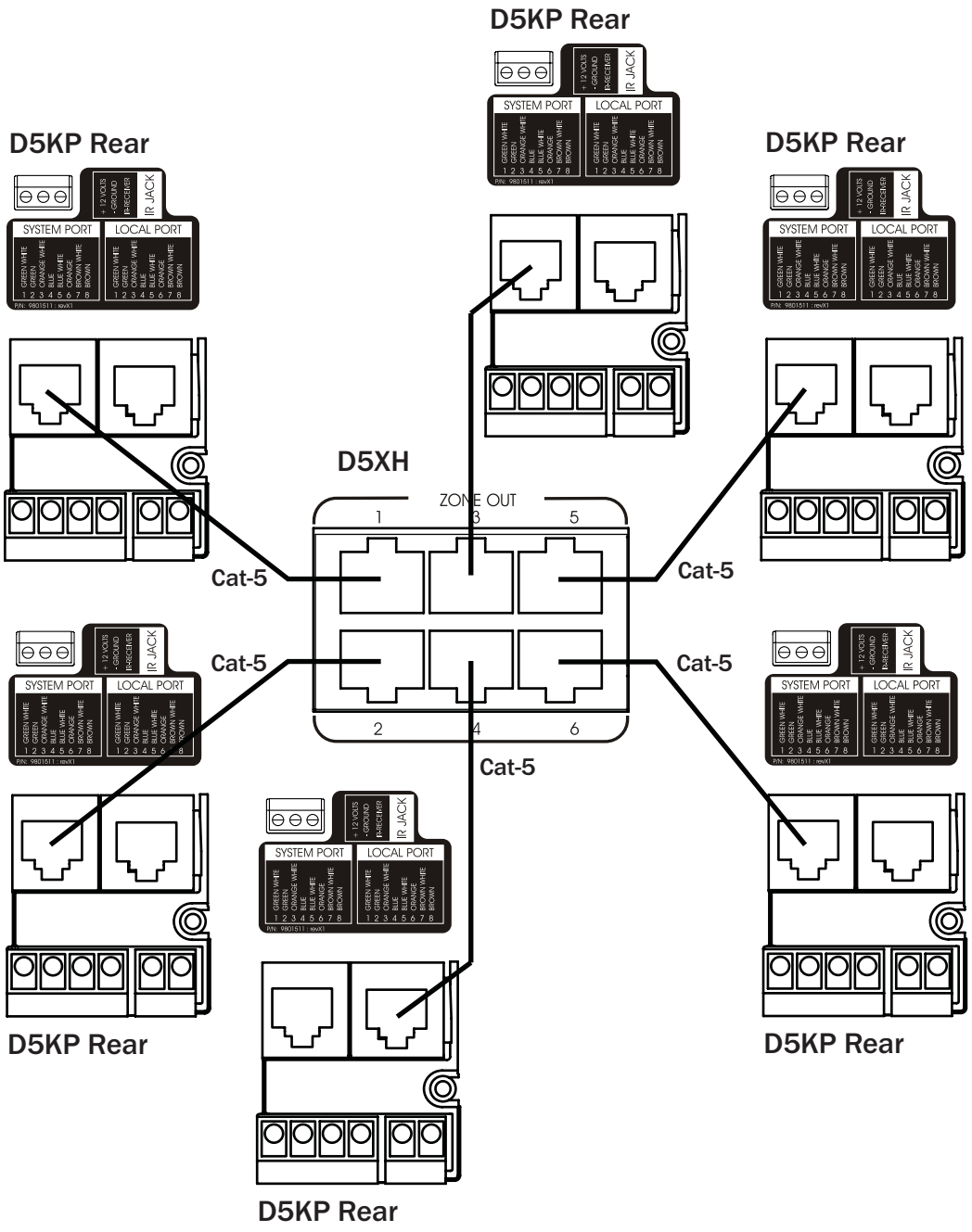



***Figure 3-4: ZONE OUT Connections***

Note: For wire runs up to 150', the Cat-5 connections are all that is necessary. For wire runs over 150', use the AUX POWER OUT connectors as described in the section entitled Auxiliary Power Connector (AUX POWER OUT).

## D5KP Speaker Connections

The D5XH sends a digital audio signal to connected D5KP Keypads where it is amplified and sent to speakers.

**WARNING!: The D5KP's amplifier is capable of powering a single pair of 8-6 Ohm speakers. DO NOT connect speakers with a rating of less than 6 Ohms! DO NOT connect more than one speaker to either speaker connector of the D5KP. In doing this, damage to the D5KP may occur and will void the products warranty.**

To connect speakers to D5KP Keypads:

1. Ensure that system power is OFF!
2. Remove the SPEAKER CONNECTOR from the D5KP
3. Strip speaker wire back 1/4"
4. Loosen speaker terminal screws on the speaker connectors
5. Insert speaker wires into terminals making sure to maintain +/- polarity
6. Tighten screws on speaker terminals
7. Re-connect the terminal strip to the SPEAKER CONNECTOR on the D5KP
8. Connect speaker wires to the room speakers maintaining correct polarity

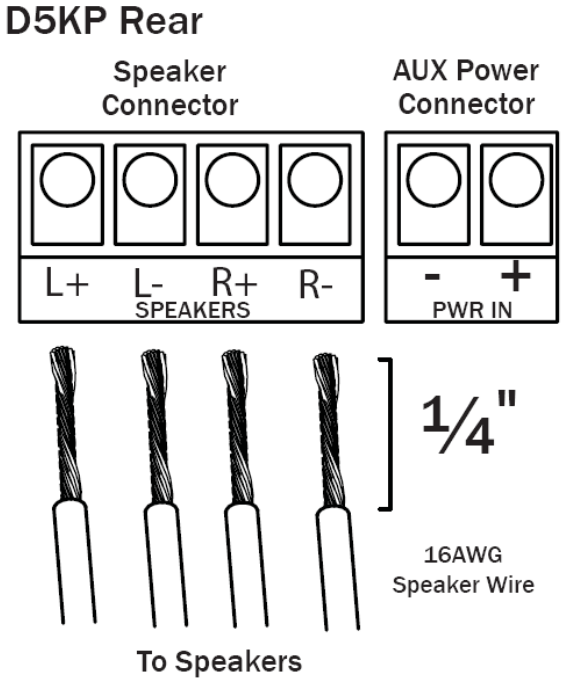



***Figure 3-5: Speaker Connections***

## 4 5 Auxiliary Power Connector (AUX POWER OUT)

For wire runs over 150', it is recommended to run an additional 16 AWG/2 conductor wire from the head-end location to the Keypads locations. This will allow the AUX POWER OUT terminals to supply additional power to the Keypads to compensate for the additional distance. For wire runs over 300', 16 AWG/2 conductor wire is required. The maximum wire run using Cat-5 and 16 AWG/2 conductor is 600'. Make all connections between the D5XH and the D5KP Amplified Keypads as previously described, then make the aux power connections described below.

To make connections:

1. Ensure that system power is OFF!
2. Strip the ends of the 16 AWG wire 1/4" on both ends of the wire run.
3. Remove the terminal strip from the AUX POWER OUT connector on the D5XH.
4. Loosen the screws for the appropriate zone's terminal pairs on the terminal strip.
5. Insert the wires into the terminal strip, paying close attention to polarity (+/-).
6. Tighten the screws on the terminal strip.
7. Remove the terminal strip from the PWR IN connector of the D5KP.
8. Loosen the screws on the D5KP's PWR IN terminal.
9. Insert the wires into the terminal, paying close attention to polarity (+/-).
10. Tighten the screws on the D5KP's PWR IN terminal.
11. Connect the terminal strip back onto the AUX POWER OUT connector on the D5XH

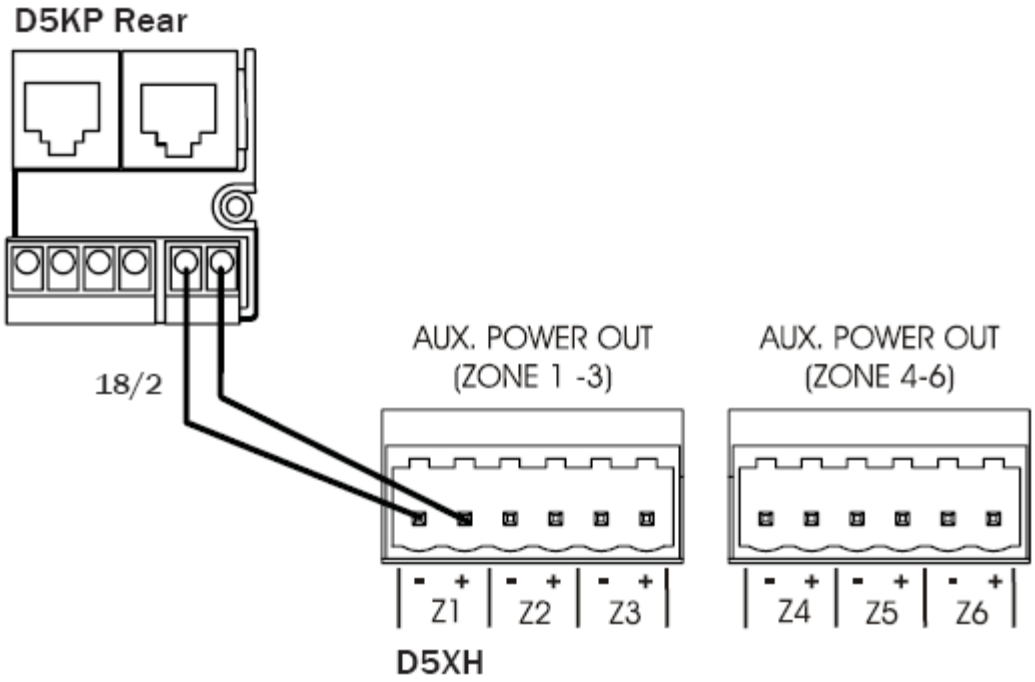



***Figure 3-6: AUX POWER OUT ZONES 1-3, 4-6, Connections***

## 8 USB Port (USB IN)

The USB IN port is designed to allow upgrades to the D5XH's firmware.

## 6 AC Power Connector

Connect the supplied cord from the AC Power Connector into a properly grounded electrical outlet.

### System Expansion

The D5XH is capable of supporting up to four sources to up to six zones. The system may be expanded in two ways:

- **Local Sources**
- **Adding Zones (Additional D5XH chassis)**

#### Local Sources

Each zone of a D5RH/D5XH-based system can have its own "Local" source connected directly to the zone's D5KP Amplified Keypads using a D5IP Source Input Wall Plate. A source connected to a D5KP is accessible from the zone in which it is connected. It is NOT AVAILABLE to the other zones of the system. Both audio and IR control capabilities are available to Local Sources through the D5KP. A zone may have a maximum of one Local Source.

### D5IP Source Input Wall Plate

A D5IP Source Input Wall Plate is required to add a Local Source to a zone. The wall plate has audio and IR connections similar to the SOURCE INPUT of the D5RH. A run of Cat-5 terminated to T-568A standard (see Figure 3-3, page 12) is required between the D5KP Amplified Keypads and the location designated for the D5IP. Connections between a source component and the D5IP are detailed in Figure 3-7, Figure 3-8 and Figure 3-9, while connections between the D5IP and the D5KP Amplified Keypads are detailed in Figure 3-10.

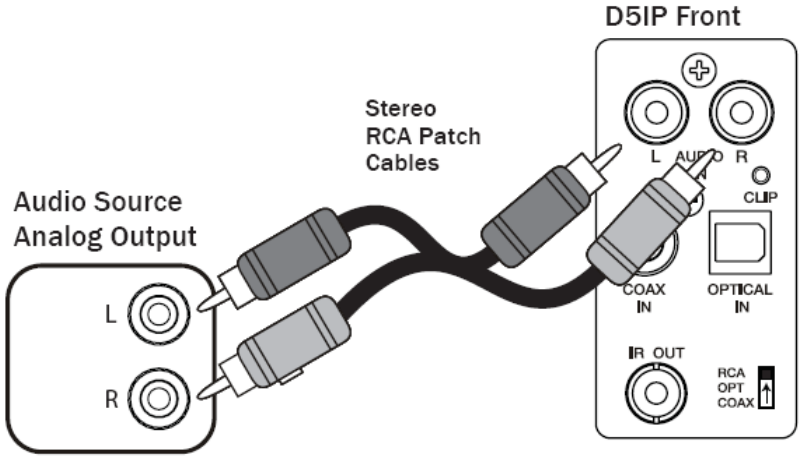



***Figure 3-7: Local Source to D5IP Connections – Analog***

**NOTE: Be sure the RCA/OPT/COAX switch is 'up' and set to 'RCA'.**

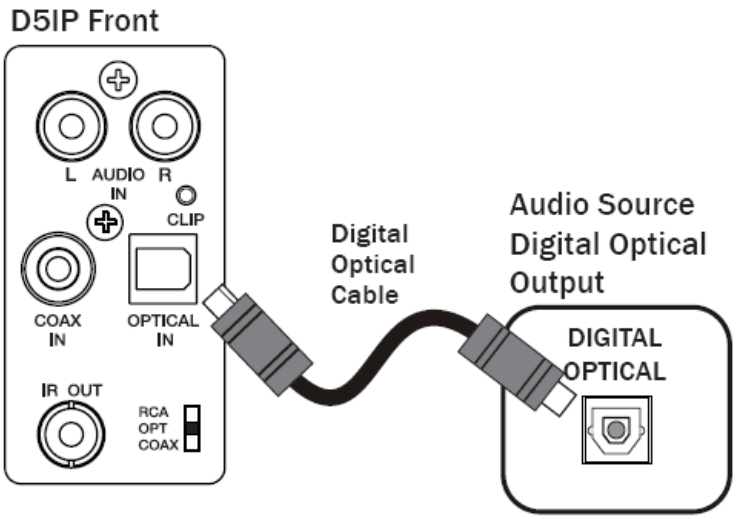



***Figure 3-8: Local Source to D5IP Connections - Digital Optical***

**NOTE: Be sure the RCA/OPT/COAX switch is 'middle' and set to 'OPT'.**

**NOTE:** Multi-channel digital audio formats (5.1, 7.1 etc.) are not supported by the D5IP, D5RH, or D5XH. However, many audio/video sources allow you to change the digital output to PCM Stereo. In most cases this will allow multi-channel audio sources to output a "summed" stereo signal through the digital output. Consult the audio/video source manual for details.
**NOTE:** Some audio sources which utilize a digital output require that you enable the digital output before it will function. If there is no audio present, check the setup menu of the audio source to confirm that the digital output is enabled.

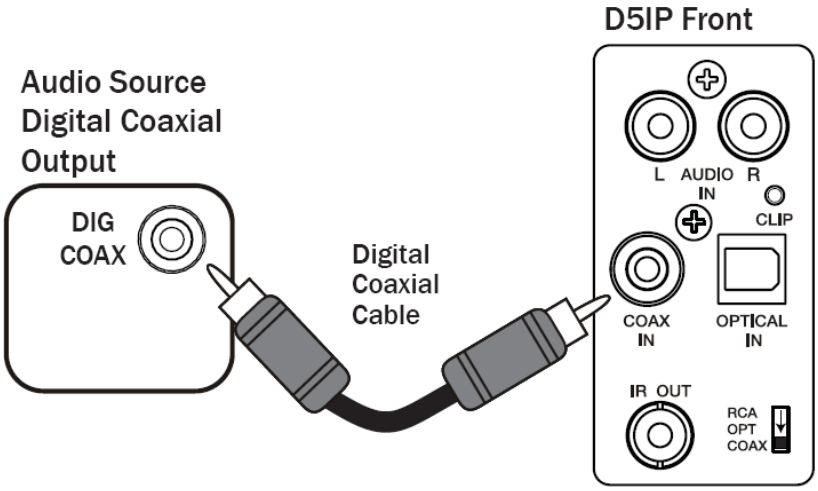



***Figure 3-9: Local Source to D5IP Connections - Digital Coaxial***

**NOTE: Be sure the RCA/OPT/COAX switch is 'down' and set to 'COAX'.**

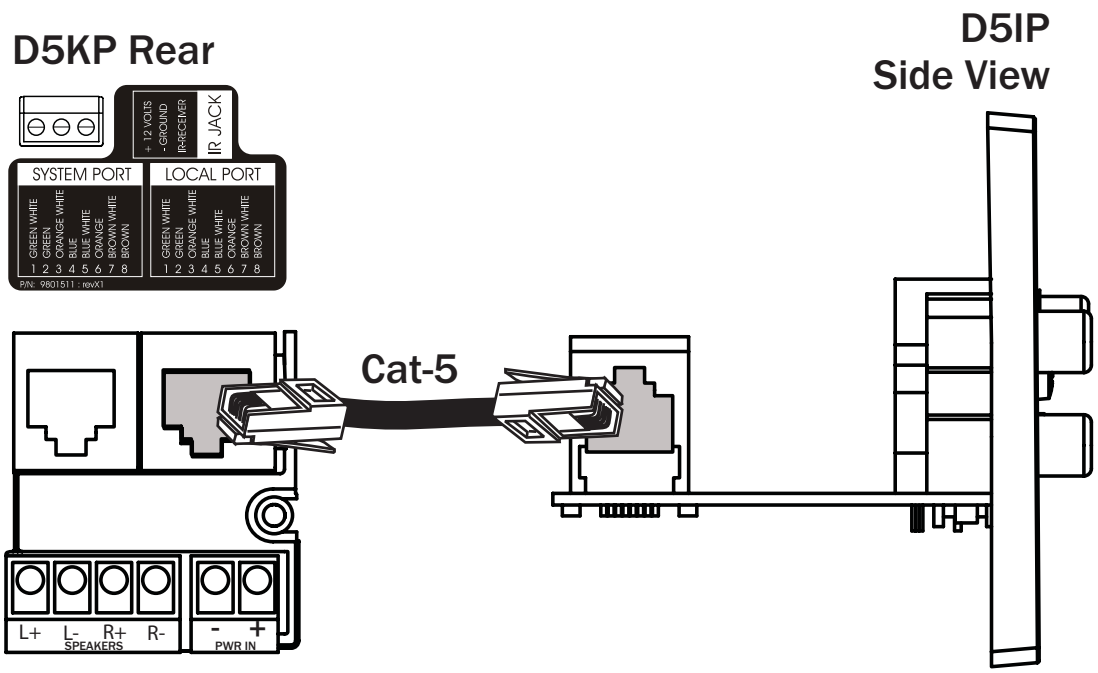
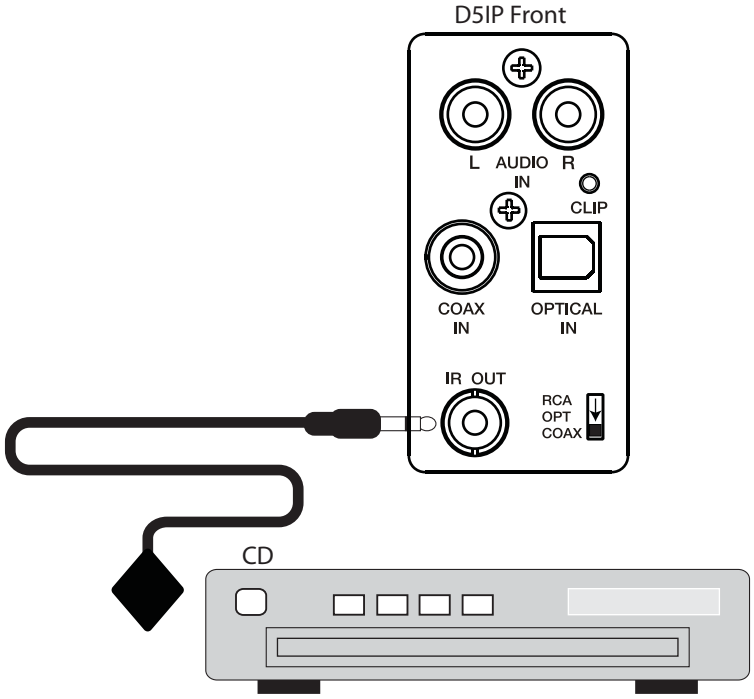



***Figure 3.10: D5IP to D5KP Connections***

## IR OUT

Connect a standard IR Emitter (283D emitter, for example) from the IR OUT port on the front of the D5IP to the IR receiver on the front of the audio source (see Figure 3.14). For sources that have an IR Input port on the back of the unit, use a 3.5mm to 3.5mm mono interconnect cable (Xantech P/N: 06017400 1-Foot Mono Cable) instead (see Figure 3-12).



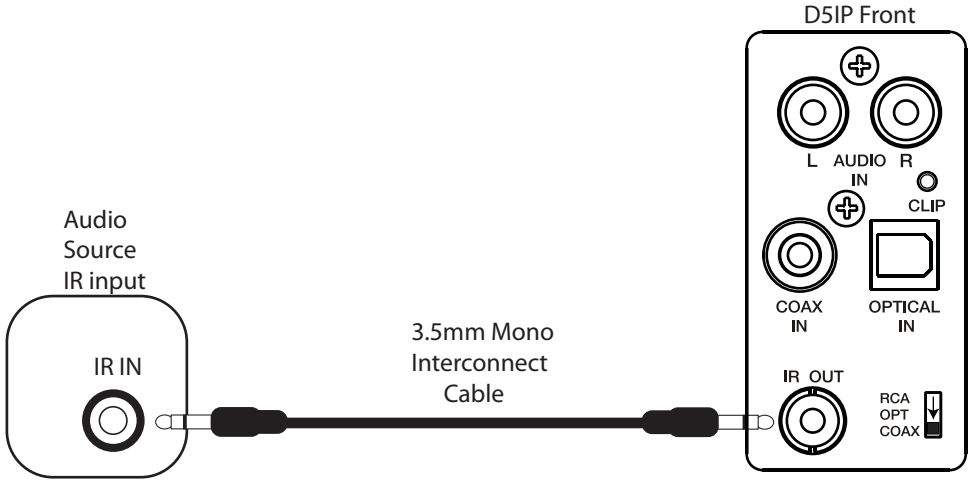




***Figure 3-11: IR OUT to Local Source - IR Emitter***
***Figure 3-12: IR OUT to Audio Source 3.5mm Interconnect Cable***

## Adding Zones to a D5RH Digital Audio Router

A basic D5RH system can contain a maximum of four sources and four zones. By adding D5XH Digital Audio Routers, the system can contain a maximum of twenty-eight zones. Each D5XH expands the system by up to six zones, while still maintaining a four source maximum limit. This section details connections required for adding D5XH Digital Audio Routers to a D5RH.

| # of Chassis | Max # of Zones |
|---|---|
| (1) D5RH | 4 |
| (1) D5RH, (1) D5XH | 10 |
| (1) D5RH, (2) D5XH | 16 |
| (1) D5RH, (3) D5XH | 22 |
| (1) D5RH, (4) D5XH | 28 |

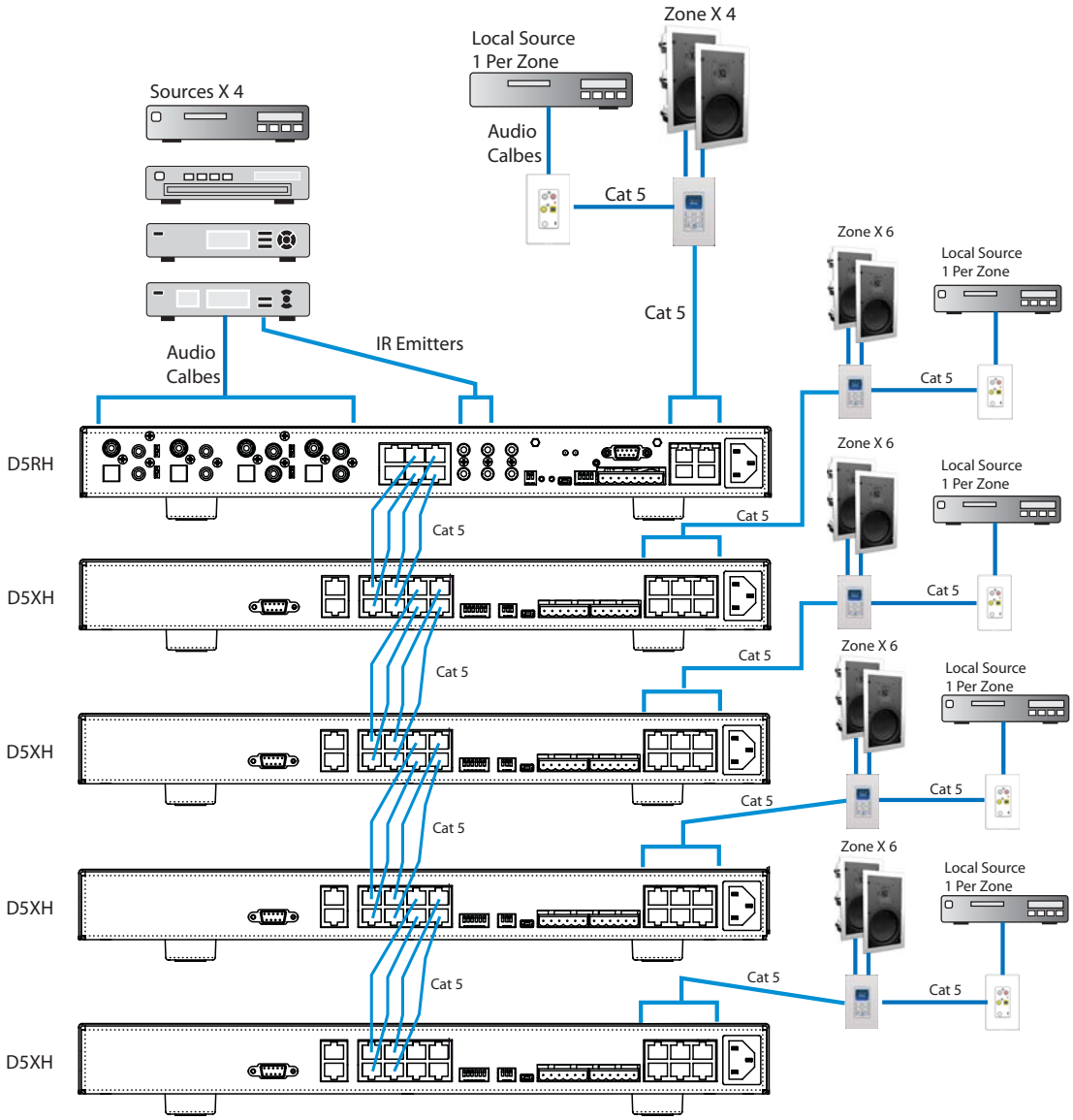



***Figure 3-13: Expanded System Overview***

Connections between a D5RH chassis and D5XH Digital Audio Routers involve Cat-5 patch cables routed between the units. All cables are included with the D5XH. Connections are required for:

- **EXPANSION OUT/EXPANSION IN**
- **SOURCE LOOP OUT/SOURCE LOOP IN**

## EXPANSION OUT/EXPANSION IN

Simply connect a Cat-5 patch cable from the D5RH's EXPANSION OUT port to the first D5XH's EXPANSION IN port. For multiple D5XH units, connect a Cat-5 patch cable from the first D5XH's EXPANSION OUT port to the next D5XH's EXPANSION IN port, and so on. See Figure 3-14 for details.

## SOURCE LOOP OUT/SOURCE LOOP IN

Connect a Cat-5 patch cable from each SOURCE LOOP OUT of the D5RH to each corresponding SOURCE LOOP IN on the first D5XH. For multiple D5XH units, connect a Cat-5 patch cable from each SOURCE LOOP OUT of the first D5XH to each corresponding SOURCE LOOP IN on the next D5XH and so on. See Figure 3-14 for details.

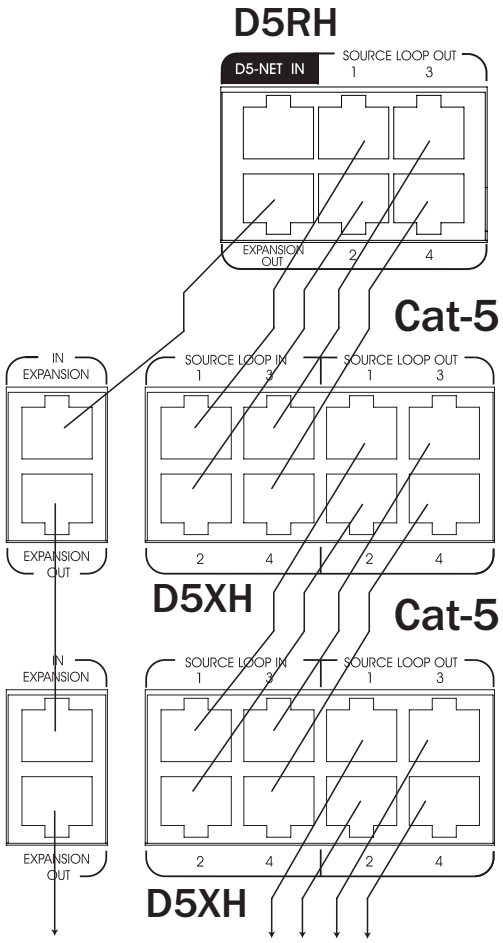



***Figure 3-14: System Expansion Connections***

## D5XH ZONE OUT

Additional zones beyond the four that connect to the D5RH are connected directly to their corresponding D5XH's ZONE OUT ports using Cat-5. See Figure 3-15 for details.

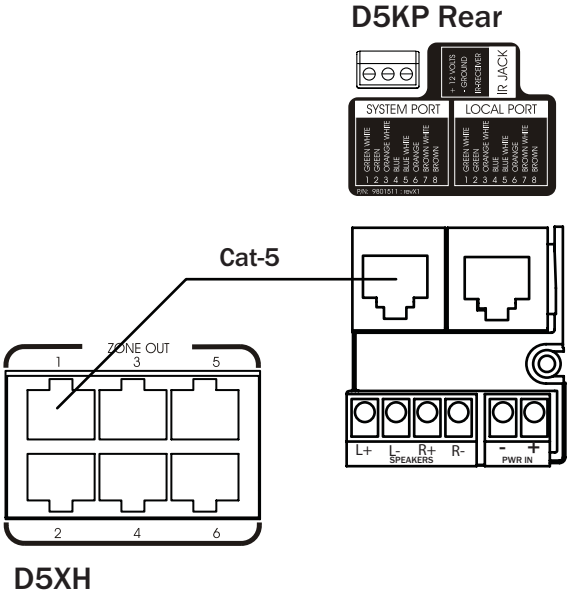



***Figure 3-15: D5XH ZONE OUT Connections***

## Stand-Alone (No D5RH) 4 Source, 6 Zone System

Figure 3-16 shows a D5XH stand-alone system with four sources and six zones with the addition of a local source in Zone 6. Each zone can have one local source. The system is comprised of a D5XH, D5KP Amplified Keypads Controllers, D5IP Source Input Wall Plates and Xantech XTC Series Speakers. This configuration provides audio from each source into each zone as well as control of each source from each zone. Zones with Local Sources have access to and control of those sources, but the Local Sources are not available to other zones within the system. This system can be expanded up to 24 zones using additional D5XHs.

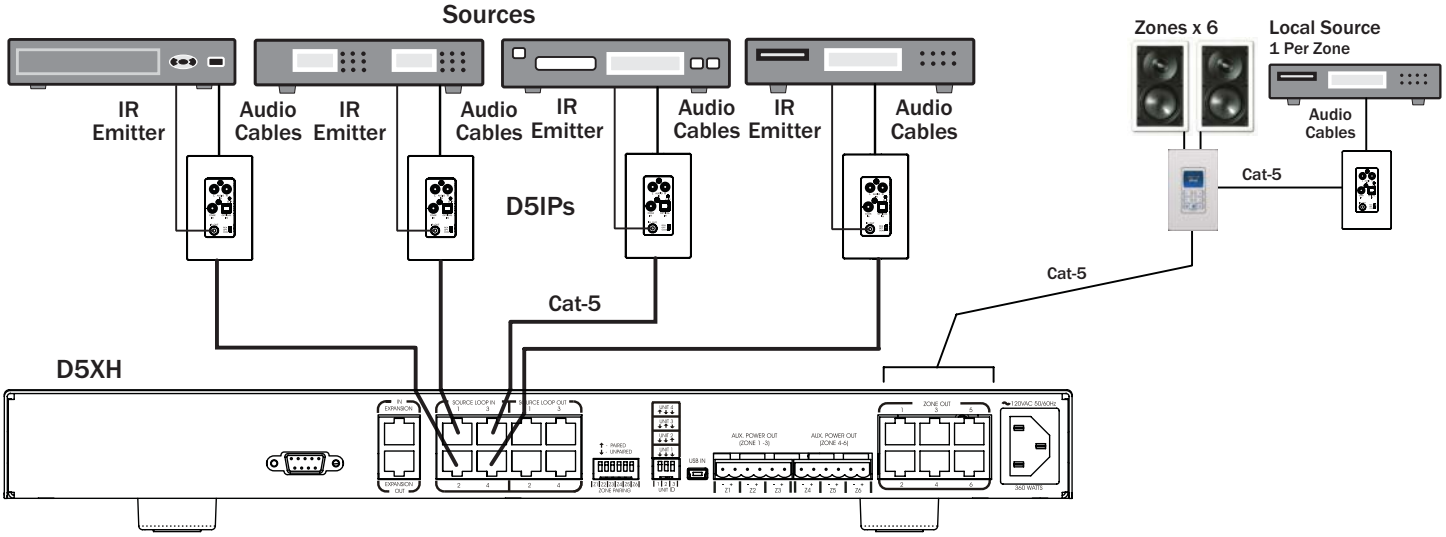



***Figure 3-16: D5XH Stand-Alone Connections***

## Adding Zones with additional D5XH Digital Audio Routers

A basic Stand Alone (No D5RH) D5XH system can contain a maximum of four sources and six zones. By connecting additional D5XH Digital Audio Expansion Routers, the system can contain a maximum of twenty four zones. Each D5XH expands the system by up to six zones, while still maintaining a four source maximum limit. This section details connections required for adding D5XH Digital Audio Routers to a D5XH Stand-Alone System.

| # of Chassis | Max # of Zones |
|---|---|
| (1) D5XH | 6 |
| (1) D5XH, (1) D5XH | 12 |
| (1) D5XH, (2) D5XH | 18 |
| (1) D5XH, (3) D5XH | 24 |

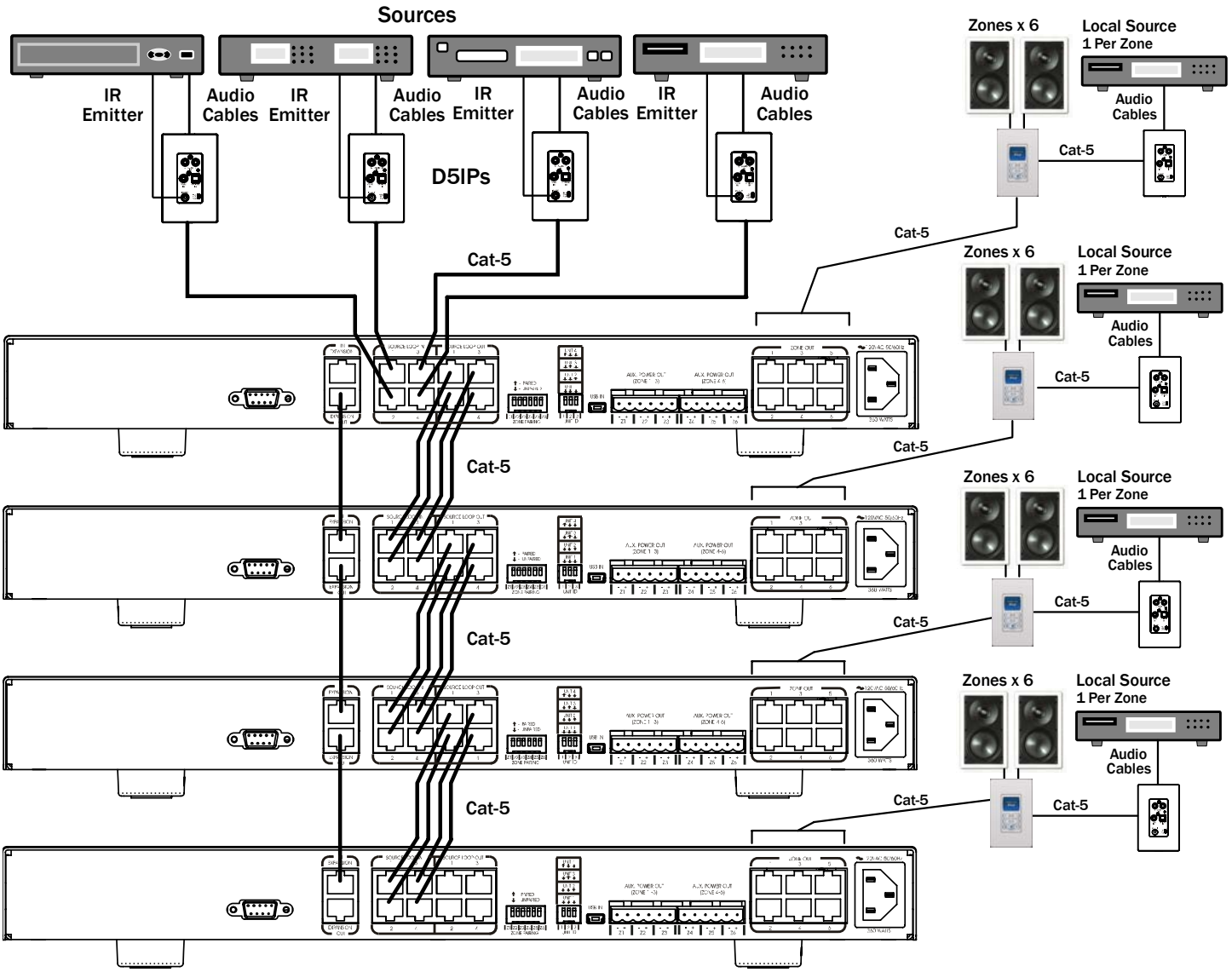



***Figure 3-17: Expanded System Overview***

Connections between a D5XH chassis in a Stand-Alone configuration and D5XH Digital Audio Routers involve Cat-5 patch cables routed between the units. All cables are included with the D5XH. Connections are required for:

- **EXPANSION OUT/EXPANSION IN**
- **SOURCE LOOP OUT/SOURCE LOOP IN**

## EXPANSION OUT/EXPANSION IN

Simply connect a Cat-5 patch cable from the D5XH's EXPANSION OUT port to the first D5XH's EXPANSION IN port. For multiple D5XH units, connect a Cat-5 patch cable from the first D5XH's EXPANSION OUT port to the next D5XH's EXPANSION IN port, and so on. See Figure 3-18 for details.

## SOURCE LOOP OUT/SOURCE LOOP IN

Connect a Cat-5 patch cable from each SOURCE LOOP OUT of the D5XH to each corresponding SOURCE LOOP IN on the next D5XH and so on. See Figure 3-18 for details.

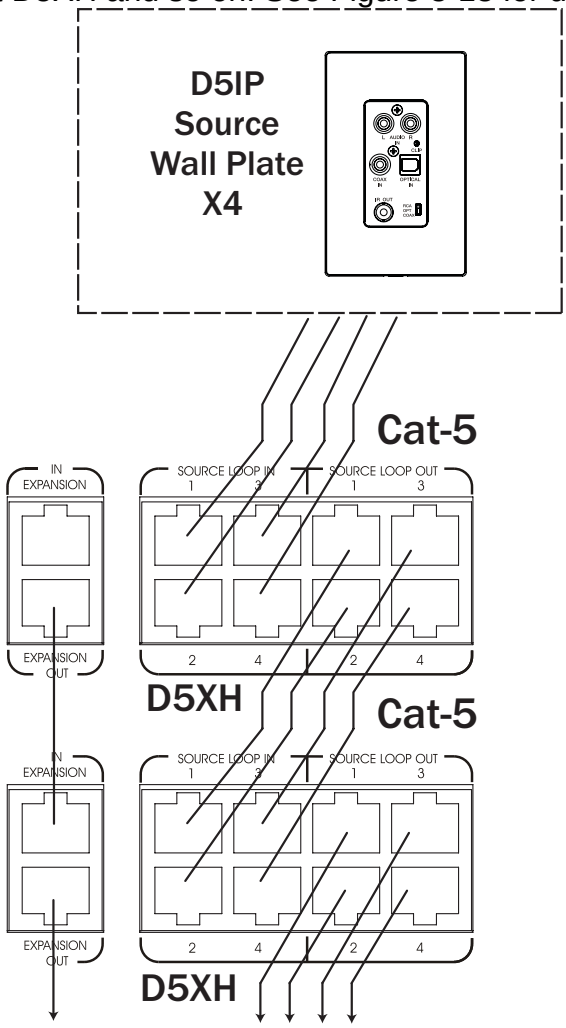



***Figure 3-18: System Expansion Connections***

### D5XH ZONE OUT

Additional zones beyond the six that connect to the D5XH are connected directly to their corresponding D5XH's ZONE OUT ports using Cat-5. See Figure 3-19 for details.

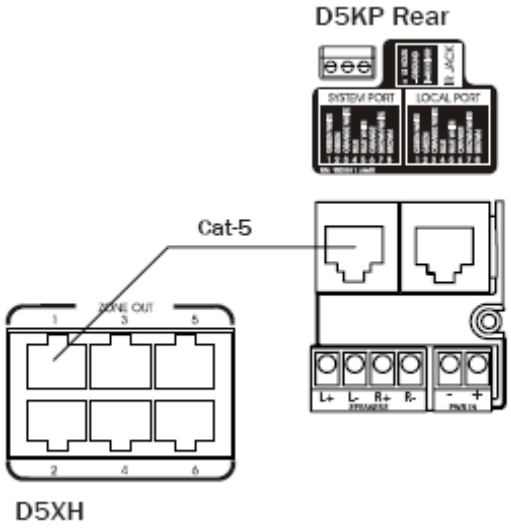



***Figure 3-19: D5XH ZONE OUT Connections***

## 4. Settings & Operation

### DIP Switch Settings

There are two groups of DIP switches on the rear panel of the D5XH that must be set prior to operation:

- **UNIT ID**
- **KEYPAD PAIRING**

### UNIT ID

Each D5XH chassis has a corresponding DIP switch setting relative to the other chassis.
To set UNIT ID DIP switches:

1. Correctly identify which chassis controls the associated zones.
2. Assign a unique unit ID based on the silkscreen on the rear panel.
3. Repeat this process for the each other expansion chassis.

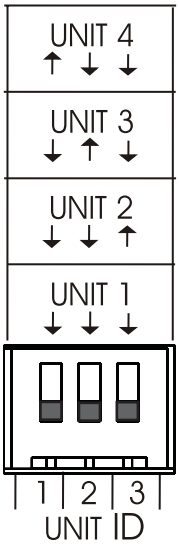



***Figure 4-1: UNIT ID DIP Switches***

## KEYPAD PAIRING

The KEYPAD PAIRING DIP switches allow each of the zones to be paired or grouped with any other zone. Any zone that is in the UP position will be paired with any other zone that is also placed in the UP position. This feature is useful to create large “party” zones where combined areas of the house share audio and system control.

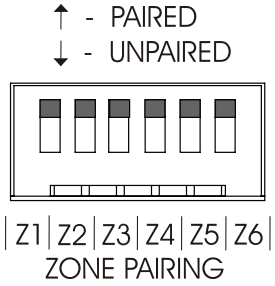



***Figure 4-2: ZONE PAIRING DIP Switches***

## Operation

Once the D5RH/D5XH is connected, all functionality is controlled by the D5KP Amplified Keypads that are installed in each zone. Essentially a D5KP controls:

- Source Selection
- Volume
- Mute
- Whole House Music (WHM)
- Do Not Disturb (DND)
- Source Lock Out
- EQ (Bass & Treble)
- Balance (Left/Right)
- Dynamic Range Compression (DRC)
- Loudness
- Power (Zone ON/OFF)
- All OFF (System OFF)

Source control functionality is performed by IR Remote Control through the D5KP's built-in IR Receiver or an additional IR receiver connected to the Local IR Receiver Input on the back of the D5KP. Complete instructions for installing and operating the Keypads are available in the D5KP Amplified Keypads Controller Installation Manual.

***Figure 4-3: D5KP Amplified Keypads***

## Appendix A: Specifications

| | |
|---|---|
| Power Input | 120 VAC / 3 Amps<br>(Export 240VAC models also available) |
| Sampling Frequency | 48kHz |
| Digital Audio Resolution | 24 Bit |
| Signal to Noise Ratio | 94dB |
| Frequency Response | 20Hz-20kHz +/- 0.1dB |

| Dimensions | |
|---|---|
| H x W x D (w/ feet) | 2 3/8" x 17" x 14 1/8"<br>(8.6cm x 43.2cm x 35.9cm) |
| H x W x D (w/o feet) | 1 3/4" x 17" x 14 1/8"<br>(4.4cm x 43.2cm x 35.9cm) |
| Weight | 19lbs (8.6kg) Unit Weight<br><br>21lbs (9.5kg) Shipping Weight |

## 5. Troubleshooting

Table 5-1 provides troubleshooting information for the D5XH Digital Audio Router.

### Audio

| Symptom | Possible Cause | Solution |
|---|---|---|
| No audio present in a specific zone | 1. Source not playing | Press Play, turn ON, etc. |
| | 2. Zone not ON | Press “Power” on the D5KP |
| | 3. Zone volume turned all the way down | Increase volume |
| | 4. Speakers in room miswired or defective, or D5KP miswired | a. Test known good speaker at D5KP speaker connector<br><br>b. Verify connections |
| No audio from specific source | Digital audio output not enabled | Check setup menu and confirm digital audio output is enabled |
| | Multi-channel digital audio formats (5.1, 7.1 etc.) are not supported by the D5IP, D5RH, etc. | Change digital Output to PCM Stereo |
| | Incorrect audio format selection. | Check RCA/OPT/COAX selection switch for proper selection. |
| No audio present in any zone | 1. See above | Perform steps above |
| | 2. Digital source is outputting multi-channel audio format (5.1, 7.1, etc.) | Select PCM Stereo output on source component. Consult source’s manual for details. |
| | 3. Digital output not enabled on source | Enable digital output through source’s menu. Set to PCM stereo. Consult source’s manual for details. |
| Hum or buzz through system speakers | 1. Ground loop | Ensure proper grounding using a three prong grounded AC outlet. |
| | 2. Receiver/Amplifier level too high | Reduce level |
| Poor Audio quality | 1. Clipping or distortion | Adjust GAIN settings |
| | 2. Speaker out of phase | Carefully check polarity of each speaker |
| | 3. Incorrect assignment of left/right source RCA cables or speaker cables | Isolate to source or room and correct |

# Xantech Limited Warranty

(Effective for products sold after July 1, 2006)

Xantech Corporation ("Xantech") warrants to the holder of a valid proof of purchase as the first end-user purchaser ("You"), its products to be free from defects in materials and workmanship for the periods specified below from the date of purchase. This limited warranty extends only to You for product purchased and used in the United States of America. For product purchased outside of the United States of America, You must contact the Xantech authorized distributor in your region for warranty services. Product is not intended for end user installation. If within the applicable warranty period above You discover such item was not as warranted above and You promptly notify Xantech in writing, Xantech shall repair or replace the items at its option. Xantech may elect which remedy or combination of remedies to provide in its sole discretion. Xantech may use functionally equivalent reconditioned/refurbished/pre-owned or new products or parts under this limited warranty. This warranty shall not apply (a) to product which shall have been installed by other than an authorized Xantech installer, (b) to installed product which is not installed to Xantech's specifications, (c) to product which shall have been repaired or altered by others than Xantech, (d) to charges for installation or set up or adjustment of customer controls, (e) to product that has suffered normal cosmetic deterioration (f) to product which shall have been subjected to negligence, misuse, abuse, accident, or damage by circumstances beyond Xantech's control, including, but not limited to, lightning, flood, electrical surge, tornado, earthquake, or any other catastrophic events beyond Xantech's control, or (g) to product which shall have been subjected to improper operation, connected equipment failure or malfunction, inadequate packing or shipping damage, maintenance or storage, or to other than normal use of service. The foregoing warranties do not cover reimbursement for labor, transportation, shipping, removal, installation, or other expenses which may be incurred in connection with repair or replacement. All claims for product shipping damage must be processes within 3 days of receipt by You.

A Xantech Return Authorization (RA) must be obtained from Xantech by You, your installer or your distributor for Product covered under this warranty. Covered product must be sent to Xantech together with proof of purchase, RA number, prepaid and insured to Xantech. Freight collect shipments will be refused. Risk of loss or damage in transit is borne by the sender. Xantech's warranty does not cover Products which have been received improperly packaged, altered, or physically damaged. Products will be inspected upon receipt.

Except as may be expressly provided and authorized in writing by Xantech, Xantech shall not be subject to any other obligations or liabilities whatsoever with respect to equipment manufactured or sold by Xantech or services rendered by Xantech.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESSED AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

**ATTENTION: TO OUR VALUED CONSUMERS**

To insure that consumers obtain quality pre-sale and after-sale support and service, Xantech products are sold exclusively through authorized dealers and authorized distributors. The warranties on Xantech products are NOT VALID if the products have been purchased from an unauthorized dealer or distributor. In order to determine if your Xantech re-seller is authorized, please call Xantech (800) 843 - 5465.

| **XANTECH PRODUCT**<br>(go to Xantech.com/warranty for model numbers) | **WARRANTY DURATION** |
|---|---|
| IR Receivers and IR Emitters | Limited Lifetime |
| Remote Control Switchers | Limited Lifetime |
| Modules and Connecting Blocks | Limited Lifetime |
| Accessories | Limited Lifetime |
| Speakers | Limited Lifetime |
| Volume Controls and Speaker Selectors | 5 year Limited |
| DIGI-5, MRC, BX, ZPR and Commercial Products | 2 year Limited |
| Amplifiers | 2 year Limited |
| Control Interfaces | 2 year Limited |
| Hand Held Remote Controls | 1 year Limited |
| SPLCD Product | 1 year Limited |
| Source Components, XIS100 | 1 year Limited |

Xantech Corporation

13100 Telfair Ave. 2F, Sylmar CA 91342 | Xantech.com

Installation Instructions, D5XH © 2008 Xantech Corporation
Document # 08905154A
This document is copyright protected. No part of this manual may be copied or reproduced in any form without prior written consent from Xantech Corporation. Xantech Corporation shall not be liable for operational, technical, or editorial errors/omissions made in this document.